

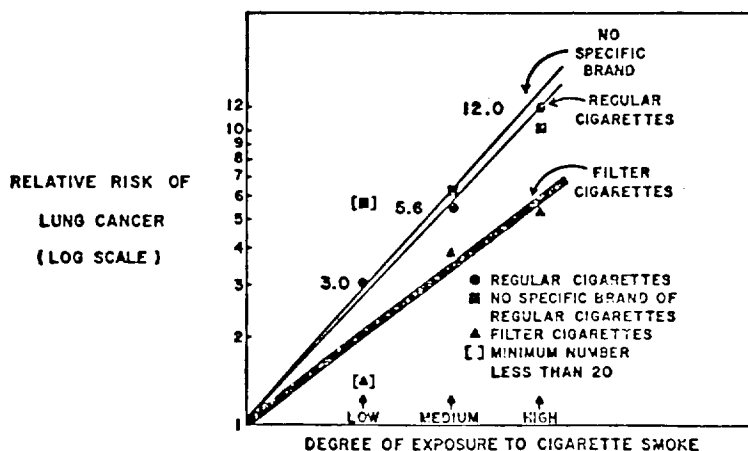
TOWARD A LESS HARMFUL CIGARETTE, A Workshop Held at the World Conference on Smoking and Health, September 11-13, 1967.
National Cancer Institute Monograph 28, 1968.

Effect of Filter Cigarettes on the Risk of Lung Cancer

IRWIN D. J. BROSS, *Ph.D.*, Roswell Park Memorial
Institute, Buffalo, New York 14203

SOME epidemiological data are presented on the question: Does switching to filter cigarettes reduce the risk of lung cancer? On the basis of these data, the answer is: The risk seems to be reduced to about 60% of what it would have been if the smoker had not switched. Unfortunately, however, even with this reduction the risk is still 4 times that of a nonsmoker, and further steps toward a less harmful cigarette are needed.

The data here are on 974 white male patients with lung cancer who were seen at Roswell Park Memorial Institute between 1960 and 1966. These patients have been matched case-for-case on age and entry date with white male patients who had no diagnosis of neoplastic disease and who were seen at the same institution in the same time period. Table 1 gives the basic data. It also defines the degree of exposure categories used in text-figure 1. However the discussion will focus on text-figure 1 since this one



TEXT-FIGURE 1.—Relative risk of lung cancer by type of cigarette and degree of exposure: Risks relative to those of nonsmokers. Lines show filter risks are 60% of the regular risks.

filter series. A second procedure (which avoids the assumption that the same reduction occurs in all degrees of exposure) is called "Cochran's test." This test tells us that there is less than one chance in a hundred that this result could be due to sampling variation ($P=0.004$).

7) Text-figure 1 shows one further point that should not be overlooked. The filters seem to provide some protection, *but this protection is still inadequate*. Even with a switch to filters, a person with a high degree of exposure to cigarette smoke has over 5 times the risk of lung cancer for a nonsmoker. Filtration is a step in the right direction, but further steps are needed. Existing filter technology enables us to take such steps immediately.

8) There is another, more subtle, point of importance to public health action that this text-figure makes. With about 1,000 lung cancer patients it was possible to see clearly differentials in risk for the filter cigarettes. It took us 6 years to amass this series. But there are over 50,000 lung cancer deaths each year. If a nationwide, retrospective surveillance system were set up which was patterned after this study, it could easily get 5,000 cases in a single year. Such a system could monitor any steps toward safer cigarettes that might be taken. Definite answers to questions about reduction in human hazards should be obtainable in 3-5 years.

The above findings show that current filter cigarettes are not the answer to the problem of lung cancer, and to this extent they are discouraging. On the whole, however, they encourage the search for a less harmful cigarette. These findings provide the first human evidence that redesign of the product can reduce health hazards. They indicate that, if full advantage were taken of existing filter and other cigarette technology, a greater protection could be provided immediately. In the competitive situation in the cigarette market, however, government standards for filter cigarettes are probably a prerequisite to progress in this direction. Finally, the findings suggest the feasibility of monitoring progress toward a less harmful cigarette. A surveillance system would permit a direct test of the various speculative theories of carcinogenesis and of the different animal model systems and would speed development of less harmful cigarettes in other ways. The present findings should be viewed with some caution since they still require confirmation by other investigators, but they represent an encouraging result in an area where such results are infrequent.

APPENDIX

Due to the unexpected findings of this study, Dr. Bross answered specific questions about the validity and interpretation of his data.

Question: Isn't it true that some filters are not effective? Why didn't you separate the effective and noneffective filters?

Answer: Recent studies have shown a wide range of effectiveness for filters. We have looked into the individual filter brands. The problem is that this cross-tabulation

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